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10/781,795	02/20/2004	Yasuyuki Arai	0756-7256	5184

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EXAMINER

MATTHEWS, COLLEEN ANN

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/781,795	Applicant(s) ARAI ET AL.	
	Examiner Colleen A. Matthews	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05/12/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 24 is objected to because of the following informalities: "wherein the thin film integrated circuit comprises:" is recited twice in the claim (line 3 and line 6).

Examiner believes it is meant to only be recited once at line 3. Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1 and 4-5** are rejected under 35 U.S.C. 102(e) as being anticipated by us U.S. Pub. No. 2004/0155317 to Bhattacharyya.

3. **Regarding claim 1**, Bhattacharyya discloses a thin film integrated circuit device comprising a metal oxide (Figures 1-8 element 12) an insulating film (14) over the metal oxide, a semiconductor film (26 and 40), a gate insulating film (52) and a gate electrode (54), which are provided over the insulating film; a thin film integrated circuit having the semiconductor film, the gate insulating film, and the gate electrode.

4. **Regarding claims 4 and 5**, Bhattacharyya discloses a thin film integrated circuit device according to claim 1, where the semiconductor film functions as an active region and as a channel region (page 7 paragraph [0089] lines 1-3)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 2-3** are rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Pub. No. 2004/0155317 to Bhattacharyya in view of U.S. Pat. No. 6,703,267 to Tanabe et al.

7. **Regarding claims 2-3**, Bhattacharyya discloses a thin film integrated circuit device according to claim 1. Bhattacharyya lacks disclosing the metal oxide as an oxide of an element selected from the group consisting of W, Ti, Ta, Mo, Nd, Ni, Co, Zr, Zn, Ru, Rh, Pd, Os, and Ir; an alloy containing the metal as a main component; or a chemical compound thereof or WO₂ or WO₃. Tanabe et al. discloses a thin film integrated circuit device (Figure 11c) with the metal oxide as WO₂ or WO₃ (Column 3 line 24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bhattacharyya to have the metal oxide as WO₂ or WO₃

as in Tanabe et al. in order to form a good interface between the metal oxide and the insulating layer.

8. **Claims 6-8, 15-16, and 18-19** are rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Pat. No 6,885,032 to Forbes et al in view of U.S. Pub. No. 2004/0155317 to Bhattacharyya.

9. **Regarding claim 6**, Forbes et al. discloses an IC label (Figure 1 element 16) comprising an insulating film (Figure 5 element 34), a semiconductor film (Figure 5 element 50 and column 7 lines 12-14), a gate insulating film (44), and a gate electrode (40) which are provided over the insulating film, a thin film integrated circuit (Figure 2a element 20) having the semiconductor film, the gate insulating film, and the gate electrode.

Forbes et al. lacks disclosing the IC label comprising a metal oxide and the insulating film over the metal oxide. Bhattacharyya discloses an IC label comprising a metal oxide (Figures 1-8 element 12) an insulating film (14) over the metal oxide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Forbes et al. to include the metal oxide of Bhattacharyya in order to form a good interface for the IC label.

10. **Regarding claim 7**, Forbes et al. discloses the IC label (Figure 2c element 16') as a contactless type (column 2 lines 39-47).

11. **Regarding claim 8**, Forbes et al. discloses a surface of the IC label (Figure 1 element 16) can be printed with a character, a letter, text, a symbol, or a diagram (Figure 1 element 14 and column 2 line 9-12).

12. **Regarding claim 15**, Forbes et al. discloses a container (Figure 1 element 12) comprising: an insulating film (Figure 5 element 34); a semiconductor film (element 50 and column 7 lines 12-14), a gate insulating film (44), and a gate electrode (40), which are provided over the insulating film, and a thin film integrated circuit having the semiconductor film, the gate insulating film, and the gate electrode, wherein the thin film integrated circuit (Figure 2a element 20) is adhered to the container (Figure 1 and column 5 lines 11-19).

Forbes et al. lacks disclosing the IC label comprising a metal oxide and the insulating film over the metal oxide. Bhattacharyya discloses an IC label comprising a metal oxide (Figures 1-8 element 12) an insulating film (14) over the metal oxide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Forbes et al. to include the metal oxide of Bhattacharyya in order to form a good interface for the IC label.

13. **Regarding claim 16**, Forbes et al. as modified discloses a container according to claim 15 as above, where the thin film integrated circuit (Figure 2a element 20) is covered by a label (Figure 2b elements 22 and 24).

14. **Regarding claim 18**, Forbes et al. as modified discloses a container according to claim 15 as above, where the thin film integrated circuit (Figure 2a element 20) is held between a first label (Figure 2b elements 22 and 24) and a second label film

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(Figure 5 element 32), and the second label is affixed to the thin film integrated circuit with an adhesive agent (Figure 5 element 36).

15. **Regarding claim 19**, Forbes et al. as modified discloses a container according to claim 15 as above. Forbes et al. discloses the metal oxide adhered to the container (Figure 1 and column 5 lines 11-19).

16. **Claims 9-11, 20-21 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2004/0155317 to Bhattacharyya in view of U.S. Pat. No 6,885,032 to Forbes et al. in view of U.S. Pub. No. 2004/0256644 to Kugler et al.

17. **Regarding claim 9**, Bhattacharyya discloses a thin film integrated circuit comprising a metal oxide (Figures 1-8 element 12), an insulating film (14) over the metal oxide, a semiconductor film (26 and 40) provided the insulating film, a gate electrode (54) provided over the semiconductor film with a gate insulating layer (54) interposed between the semiconductor layer and the gate electrode.

Bhattacharyya lacks disclosing the IC label comprising a contactless thin film integrated circuit. Forbes et al. discloses an IC label (Figure 2 element 16') comprising a contactless thin film integrated circuit (column 2 lines 39-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bhattacharyya to include a contactless thin film integrated circuit as in Forbes et al. in order to allow the integrated circuit to be used for applications such as RFID tags.

Bhattacharyya lacks teaching an antenna in a same layer as the gate electrode. Kugler et al. teaches an antenna in the same layer as the gate electrode (page 7

paragraph 75 lines 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add an antenna in the same layer as the gate electrode to Bhattacharyya in order to provide an identification device with an active antenna that can be deposited on a substrate with conventional printing methods.

18. **Regarding claim 10**, Bhattacharyya as modified teaches the antenna in the same layer as the gate electrode according to claim 9. Bhattacharyya as modified lacks teaching the antenna with the same material as the gate electrode. Kugler et al. teaches the antenna formed from the same material as the gate electrode (page 2 paragraph 22 lines 5-8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Bhattacharyya by making the antenna with the same material as the gate electrode in order to further simplify production of the device by ordinary printing methods.

19. **Regarding claim 11**, Bhattacharyya teaches the antenna in the same layer as the gate electrode according to claim 9. Bhattacharyya as modified lacks teaching the antenna comprising a conductive paste. Kugler et al. teaches the antenna comprising a conductive paste (page 7 paragraph 76 lines 3-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Bhattacharyya by having the antenna comprising a conductive paste in order to further simplify production of the device by ordinary printing methods.

20. **Regarding claim 20**, Bhattacharyya discloses a thin film integrated circuit comprising a metal oxide (Figures 1-8 element 12), an insulating film (14) over the metal

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oxide, a semiconductor film (26 and 40) provided the isolating film and a gate electrode (54) that is provided over the of semiconductor film.

Bhattacharyya lacks teaching a container comprising a contactless thin film integrated circuit that is adhered to the container and lacks teaching an antenna provided in the same layer as the gate electrode.

Forbes et al. teaches a container (Figure 1 element 12) comprising a contactless (column 2 lines 39-47) thin film integrated circuit (Figure 2a element 20) that is adhered to the container (Figure 1 and column 5 lines 11-19). Forbes et al. also discloses the thin film integrated circuit (Figure 2a element 20) covered by a label (Figure 2b elements 22 and 24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bhattacharyya to have a container comprising the contactless thin film integrated circuit adhered to the container as in Forbes et al. in order to attach the IC to a products such as cell phones or RFID tags.

Bhattacharyya teaches the limitations outlined above and lacks teaching an antenna provided in the same layer as the gate electrode. Kugler et al. teaches an antenna in the same layer as the gate electrode (page 7 paragraph 75 lines 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add an antenna in the same layer as the gate electrode to further modify Bhattacharyya in order to provide an identification device with an active antenna that can be deposited on a substrate with conventional printing methods.

21. **Regarding claims 21 and 23**, Bhattacharyya as modified teaches the container according to claim 20 as outlined above. Bhattacharyya lacks teaching the thin film

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integrated circuit covered by a label and lacks teaching the thin film integrated circuit held between a first label and a second label and the second label is affixed to the thin film integrated circuit with an adhesive agent.

Forbes et al. discloses the thin film integrated circuit (Figure 2a element 20) covered by a label (Figure 2b elements 22 and 24). Forbes et al. also discloses the thin film integrated circuit (Figure 2a element 20) held between a first label (Figure 2b elements 22 and 24) and a second label (Figure 5 element 32), and the second label is affixed to the thin film integrated circuit with an adhesive agent (Figure 5 element 36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bhattacharyya to have a the thin film integrated circuit covered by a label and held between a first label and a second label as in Forbes et al. in order to attach the IC to a products such as cell phones or RFID tags.

22. **Claims 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No 6,885,032 to Forbes et al. in view of U.S. Pub. No. 2004/0155317 to Bhattacharyya in view of U.S. Pat. No. 6,878,643 to Krulevitch et al.

23. **Regarding claim 12**, Forbes et al. discloses an IC label (Figure 1 element 16) comprising a contactless (column 2 lines 39-47) thin film integrated circuit (Figure 2a element 20), where the thin film integrated circuit comprises: an insulating film (Figure 5 element 34), a semiconductor film (50), a gate insulating film (44), and a gate electrode (40), which are provided over the insulating film, and wiring (Figure 5 element 60) connected to an impurity region of the semiconductor film.

Forbes et al. lacks disclosing the IC label comprising a metal oxide and the insulating film over the metal oxide. Bhattacharyya discloses an IC label comprising a metal oxide (Figures 1-8 element 12) an insulating film (14) over the metal oxide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Forbes et al. to include the metal oxide of Bhattacharyya in order to form a good interface for the IC label.

Forbes et al. also lacks teaching an antenna in a same layer as the wiring. Krulevitch et al. teaches an antenna (Figure 11 element 1104) in the same layer as the wiring (Figure 11 element 1106). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add to Forbes et al. the antenna in the same layer as the wiring in order to facilitate communication with a remote receiver.

24. **Regarding claim 24**, Forbes et al. discloses a container (Figure 1 element 12) comprising a contactless thin film integrated circuit where the thin film integrated circuit comprises an insulating film (Figure 5 element 34), a semiconductor film (50), a gate insulating film (44) and a gate electrode (40) provided over the isolating film, and a wiring (60) provided over the semiconductor film.

Forbes et al. lacks disclosing the IC label comprising a metal oxide and the insulating film over the metal oxide. Bhattacharyya discloses an IC label comprising a metal oxide (Figures 1-8 element 12) an insulating film (14) over the metal oxide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Forbes et al. to include the metal oxide of Bhattacharyya in order to form a good interface for the IC label.

Forbes et al. as modified files to an antenna provided in a same layer as the wiring. Krulevitch et al. teaches an antenna (Figure 11 element 1104) in the same layer as the wiring (Figure 11 element 1106). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Forbes et al. by adding the antenna in the same layer as the wiring in order to facilitate communication with a remote receiver.

25. **Regarding claims 25 and 27**, Forbes et al. as modified discloses the container according to claim 24. Forbes et al. also discloses the thin film integrated circuit (Figure 2a element 20) covered by a label (Figure 2b elements 22 and 24). Forbes et al. also discloses the thin film integrated circuit (Figure 2a element 20) held between a first label (Figure 2b elements 22 and 24) and a second label (Figure 5 element 32), and the second label is affixed to the thin film integrated circuit with an adhesive agent (Figure 5 element 36).

26. **Claims 13 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No 6,885,032 to Forbes et al. in view of U.S. Pub. No. 2004/0155317 to Bhattacharyya in view of U.S. Pat. No. 6,878,643 to Krulevitch et al. in further view of U.S. Pub. No. 2004/0256644 to Kugler et al.

27. **Regarding claim 13**, Forbes et al. as modified teach an IC label according to claim 12 as outlined above. Forbes et al. as modified fail to teach the antenna comprises a same material as the wiring. Kugler et al. discloses an antenna made from a metal (column 5 paragraph 56 lines 1-3). It would have been obvious to one of

ordinary skill in the art at the time the invention was made to further modify Forbes et al. by making the antenna from a metal that is the same as the metal wiring in order to further simplify production of the device by ordinary printing methods.

28. **Regarding claim 14**, Forbes et al. as modified. teach an IC label according to claim 12 as outlined above. Forbes et al. fail to teach the antenna comprising a conductive paste. Kugler et al. discloses an antenna made from a conductive paste (page 7 paragraph 76 lines 3-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Forbes et al. by having the antenna comprise a conductive paste in order to further simplify production of the device by ordinary printing methods.

29. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No 6,885,032 to Forbes et al. in view of U.S. Pub. No. 2004/0155317 to Bhattacharyya in view of U.S. Pub. No. 2002/0027247 to Arao et al.

30. **Regarding claim 17**, Forbes et al. as modified teaches a container according to claim 16 as outlined above. Forbes et al. also teaches a protective film of SiN_x (Figure 5 element 70) provided between the thin film integrated circuit (Figure 2a element 20) and the label (Figure 2b elements 22 and 24). Forbes et al. lacks teaching the protective film having a DLC or CN film. Arao et al. teaches a protective film of DLC (Figure 10B element 704) provided on a thin film integrate circuit. It would have been obvious to one of ordinary skill in the art at the time the invention was made use the DLC film of Arao et

al. as the protection layer in Forbes et al. in order to prevent the invasion of oxygen as well as water and also to mechanically protect the thin film integrated circuit.

31. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2004/0155317 to Bhattacharyya in view of U.S. Pat. No 6,885,032 to Forbes et al. in further view of U.S. Pub. No 2004/0256644 to Kugler et al. in further view of U.S. Pub. No. 2002/0027247 to Arao et al.

32. **Regarding claim 22**, Bhattacharyya as modified teaches a container according to claim 20 as outlined above. Forbes et al. also teaches a protective film of SiN_x (Figure 5 element 70) provided between the thin film integrated circuit (Figure 2a element 20) and the label (Figure 2b elements 22 and 24). Forbes et al. lacks teaching the protective film having a DLC or CN film. Arao et al. teaches a protective film of DLC (Figure 10B element 704) provided on a thin film integrate circuit. It would have been obvious to one of ordinary skill in the art at the time the invention was made use further modify Bhattacharyya to have the protective films as the DLC film of Arao et al. as the protection layer in Forbes et al. in order to prevent the invasion of oxygen as well as water and also to mechanically protect the thin film integrated circuit.

33. **Claim 26** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No 6,885,032 to Forbes et al. in view of U.S. Pub. No. 2004/0155317 to Bhattacharyya in further view of U.S. Pat. No 6,878,643 to Krulevitch et al in further view of U.S. Pub. No. 2002/0027247 to Arao et al.

34. **Regarding claim 26**, Forbes et al. discloses a container according to claim 24. Forbes et al. also teaches a protective film of SiN_x (Figure 5 element 70) provided between the thin film integrated circuit (Figure 2a element 20) and the label (Figure 2b elements 22 and 24). Forbes et al. lacks teaching the protective film having a DLC or CN film. Arao et al. teaches a protective film of DLC (Figure 10B element 704) provided on a thin film integrate circuit. It would have been obvious to one of ordinary skill in the art at the time the invention was made use the DLC film of Arao et al. as the protection layer in Forbes et al. in order to prevent the invasion of oxygen as well as water and also to mechanically protect the thin film integrated circuit.

Response to Arguments

35. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

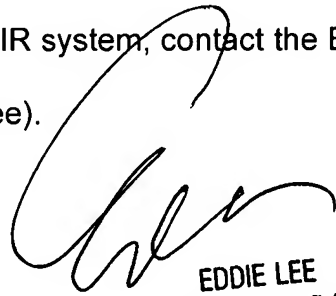
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen A. Matthews whose telephone number is 571-272-1667. The examiner can normally be reached on Monday - Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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